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Object-Oriented Programming, Final Project

STREAMING
PLATFORM
SERVICE

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PROJECT BACKGROUND

In recent years, video-on-demand streaming services have proliferated, for example Netflix, Disney, Disney+, among others. Some of them specialise in the volume of videos they provide to their users, while others have set themselves the challenge of showing only videos of their own brand. A limited version to support a future provider of this type of service is the one described below:

You want to work with two types of videos: movies and series. Every video has an ID, a name, a length, and a genre (drama, action, mystery, etc.).

Series have episodes and each episode has a title and a season it belongs to.

We are interested in knowing the average rating that each of the videos has received. This rating is on a scale of 1 to 5 where 5 is the best rating.

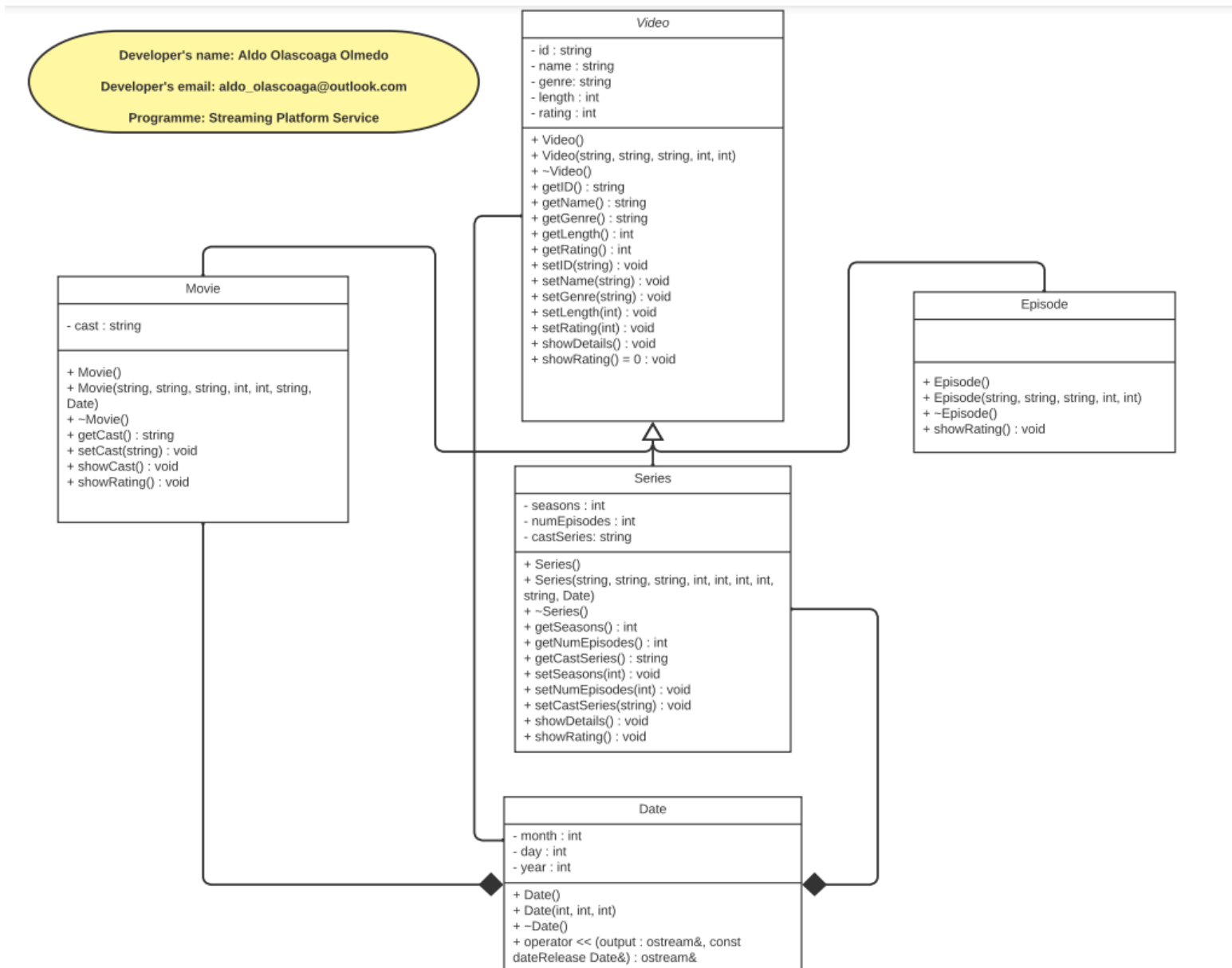
The system must be able to:

- Show the videos in general with their ratings
- Show the episodes of a certain series with their ratings
- Show movies with their ratings or by genre

UML CLASS DIAGRAM

UML Class Diagrams are very useful when it comes to modelling software systems since they illustrate any specific needs of a system and help us understand the general overview of the schematics of an application.

For this specific project, the UML Class Diagram reads as follows:



For this Object-Oriented Programming project, I decided to implement the UML Class Diagram above since I am certain that it best represents in a clear way how the application works.

First, I created an abstract class called “Video”; then, I created 3 more classes (“Movie”, “Series” and “Episode”) which inherit from the first class mentioned so I could apply inheritance and follow the rule in software engineering that says “Do not repeat yourself”; and finally, I created a final class called “Date” owing to the fact that I wanted my system to use operator overloading and print a release date for some movies and series.

This UML Class Diagram definitely helped me out to achieve the application functionality.

CLASSES CREATED FOR THE PROGRAMME

- **Video:** This abstract class was crucial to develop the programme correctly. It was the only superclass which contained a pure virtual function that was utilised to overwrite functions and apply polymorphism as well.
- **Movie:** This class inherited from “Video” and was helpful to create Movie objects with its attributes and methods, including the virtual function.
- **Series:** The series class was a derived class from “Video” and was utilised to create all the series available on the catalogue.
- **Episode:** This class was created to compose the Series class with instances of this Episode class.
- **Date:** The Date class was developed in order to apply operator overloading (<<).

INHERITANCE

For this OOP project, the concept of inheritance was crucial to develop it in an efficient way.

Movie, Series and Episode classes inherited from the abstract class Video in such a way that redundant lines of code were avoided. Attributes and methods were inherited and some of them were overwritten to be used later on using polymorphism.

USING GETTERS AND SETTERS

In order to access all the attributes from all of the proposed classes for this project, getter methods were utilised to do so. They were very helpful to print all the details about movies, series and episodes. On the other hand, the setter methods were not that utilised since all of the objects were created directly from their constructors. However, setters were still declared in the programme in case of wanting to modify an attribute of a specific class.

FUNCTION OVERRIDING

Function overriding enabled the programme to employ a function that was declared on the superclass, so the derived classes were capable of using it to do something specific within that class. This was useful to print information about each derived class whenever it was needed.

POLYMORPHISM

The polymorphism concept was utilised on this project with the virtual function (showRating) that was firstly declared on the superclass. Applying polymorphism enabled the function to perform different tasks within the application; when a movie rating had to be displayed, it did; when a series rating had to be shown on screen, it did; and when an episode rating had to appear on the user's screen, it did as well. The C++ compiler knew exactly which method to execute depending on what object it was working with.

This technique was employed to optimise the programme functionality.

ABSTRACT CLASSES

An abstract class was declared on this OOP project; it was, in fact, the superclass.

In order to create an abstract class, a pure virtual function must be declared within the class. The only restriction with this, is that objects from this class cannot be created as such, but it works as a blueprint for the derived classes. This happens in this project.

OPERATOR OVERLOADING

Applying operator overloading gives the compiler the ability to provide the operators with a special meaning for a data type.

For this project, the operator << was overloaded in such a way that the programme could print a release date object for some movies and series; this object has the attributes month, day and year. These three attributes were printed together next to each other thanks to the operator overloading in the format (mm/dd/yyyy).

This technique was far much easier and faster than printing each attribute of class Date with its getter methods.

EXCEPTION HANDLING

Exceptions are run-time anomalies or abnormal conditions that a programme encounters during its execution, and they have been implemented for this project in case they may happen.

They are very useful when it comes to finding specific errors that might crash the whole programme, so when an anomaly occurs, the application executes a code of block and may provide a solution for the user to try.

In this project, exceptions were employed instead of if-statements to verify if txt files were within the programme. Txt files were created in this OOP project in order to read information about movies and series.

TEST CASES

TEST CASE: TESTING THE MENU

TESTING THE MENU: SUCCESSFUL CASE

For this test, we are about to confirm that the application menu works smoothly as long as the user types the options between 1 and 8. The programme displays the following:



```
➤ make -s
➤ ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 8

OK. Thanks for visiting Aldo+

-----** GOODBYE! **-----
➤
```

TESTING THE MENU: FAILED CASE

However, in this test we prove that the application does not work when the user chooses an option which is out of range or not an integer, that is, less than 1 or more than 8, or a string or a character. The programme displays the following:

```
> make -s
> ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 9

Invalid input! Please restart the programme and enter a valid option.
> 
```

TEST CASE: LOADING A DATA FILE

LOADING A DATA FILE: SUCCESSFUL CASE

Test steps:

1. Choose option #1 from the menu

As we can see in the menu, if a user types the option #1, a data file should be on their screen showing all the movies and series available on the application. Having said that, we have got the following situations:

*Expected output before testing:***-----* LIST OF MOVIES ON ALDO+ *-----**

- [1] "BATMAN BEGINS"**
- [2] "BATMAN: THE DARK KNIGHT"**
- [3] "SHREK"**
- [4] "CARS"**
- [5] "THE AVENGERS"**
- [6] "TOY STORY"**
- [7] "TOY STORY 2"**
- [8] "TOY STORY 3"**
- [9] "MONSTERS, INC."**
- [10] "THE LION KING"**
- [11] "THOR"**
- [12] "CAPTAIN AMERICA: THE FIRST AVENGER"**
- [13] "HULK"**
- [14] "IRON MAN"**
- [15] "STAR WARS: A NEW HOPE"**
- [16] "STAR WARS: THE EMPIRE STRIKES BACK"**
- [17] "STAR WARS: RETURN OF THE JEDI"**
- [18] "FOREST GUMP"**
- [19] "THE LITTLE RASCALS"**
- [20] "HER"**

-----* LIST OF SERIES ON ALDO+ *-----

- [1] "OBI-WAN KENOBI"**
- [2] "THE MANDALORIAN"**
- [3] "BLACK MIRROR"**

[4] "THE RANCH"

[5] "TED LASSO"

Actual output after testing:

```
Option: 1
Loading file...

These are all the movies and series which are available on the platform:

-----* LIST OF MOVIES ON ALDO+ *-----
[1] "BATMAN BEGINS"
[2] "BATMAN: THE DARK KNIGHT"
[3] "SHREK"
[4] "CARS"
[5] "THE AVENGERS"
[6] "TOY STORY"
[7] "TOY STORY 2"
[8] "TOY STORY 3"
[9] "MONSTERS, INC."
[10] "THE LION KING"
[11] "THOR"
[12] "CAPTAIN AMERICA: THE FIRST AVENGER"
[13] "HULK"
[14] "IRON MAN"
[15] "STAR WARS: A NEW HOPE"
[16] "STAR WARS: THE EMPIRE STRIKES BACK"
[17] "STAR WARS: RETURN OF THE JEDI"
[18] "FOREST GUMP"
[19] "THE LITTLE RASCALS"
[20] "HER"

-----* LIST OF SERIES ON ALDO+ *-----
[1] "OBI-WAN KENOBI"
[2] "THE MANDALORIAN"
[3] "BLACK MIRROR"
[4] "THE RANCH"
[5] "TED LASSO"

Thanks for taking a look at our catalogue! 🍿 📺
```

LOADING A DATA FILE: FAILED CASE

Test steps:

1. Choose option #1 from the menu

If the C++ compiler does not find any file that includes a list of movies and series (videos.txt), nothing but a message saying that nothing was found will be displayed on screen.

```
> make -s
> ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 1

Loading file...

These are all the movies and series which are available on the platform:

* No such file with videos provided. We're sorry!
> 
```

TEST CASE: SHOWING ALL MOVIES AND SERIES AND THEIR RATINGS

In this test, all movies and series available on the catalogue are expected to be shown on the user's screen. Besides, their respective ratings must be shown as well.

The catalogue contains the following videos:

-----* LIST OF MOVIES ON ALDO+ *-----

- [1] "BATMAN BEGINS"**
- [2] "BATMAN: THE DARK KNIGHT"**
- [3] "SHREK"**
- [4] "CARS"**
- [5] "THE AVENGERS"**
- [6] "TOY STORY"**
- [7] "TOY STORY 2"**
- [8] "TOY STORY 3"**
- [9] "MONSTERS, INC."**
- [10] "THE LION KING"**
- [11] "THOR"**
- [12] "CAPTAIN AMERICA: THE FIRST AVENGER"**
- [13] "HULK"**
- [14] "IRON MAN"**
- [15] "STAR WARS: A NEW HOPE"**
- [16] "STAR WARS: THE EMPIRE STRIKES BACK"**
- [17] "STAR WARS: RETURN OF THE JEDI"**
- [18] "FOREST GUMP"**
- [19] "THE LITTLE RASCALS"**

[20] "HER"

-----* LIST OF SERIES ON ALDO+ *-----

[1] "OBI-WAN KENOBI"

[2] "THE MANDALORIAN"

[3] "BLACK MIRROR"

[4] "THE RANCH"

[5] "TED LASSO"

**SHOWING ALL MOVIES AND SERIES AND THEIR RATINGS:
SUCCESSFUL CASE**

Test steps:

2. Choose option #2 from the menu

Expected output before testing:

All movies and series ratings should be on screen when the user types option 2 in the application menu.

-----* LIST OF MOVIES ON ALDO+ *-----

[1] "BATMAN BEGINS"	RATING = 3
[2] "BATMAN: THE DARK KNIGHT"	RATING = 5
[3] "SHREK"	RATING = 4
[4] "CARS"	RATING = 3
[5] "THE AVENGERS"	RATING = 4
[6] "TOY STORY"	RATING = 4
[7] "TOY STORY 2"	RATING = 5
[8] "TOY STORY 3"	RATING = 5
[9] "MONSTERS, INC."	RATING = 5

[10] "THE LION KING"	RATING = 4
[11] "THOR"	RATING = 4
[12] "CAPTAIN AMERICA: THE FIRST AVENGER"	RATING = 4
[13] "HULK"	RATING = 3
[14] "IRON MAN"	RATING = 4
[15] "STAR WARS: A NEW HOPE"	RATING = 5
[16] "STAR WARS: THE EMPIRE STRIKES BACK"	RATING = 5
[17] "STAR WARS: RETURN OF THE JEDI"	RATING = 5
[18] "FOREST GUMP"	RATING = 5
[19] "THE LITTLE RASCALS"	RATING = 5
[20] "HER"	RATING = 5

-----* LIST OF SERIES ON ALDO+ *-----

[1] "OBI-WAN KENOBI"	RATING = 5
[2] "THE MANDALORIAN"	RATING = 5
[3] "BLACK MIRROR"	RATING = 5
[4] "THE RANCH"	RATING = 4
[5] "TED LASSO"	RATING = 5

Actual output after testing:

Apart from showing all the movies and series and their respective ratings, the application shows more details about all of them, such as ID, name, genre, length in minutes, number of seasons, number of episodes, running time per episode on average for each series and cast. This is definitely something very useful for the user so they can have a better perspective of each movie and series.

```
> make -s
> ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 2

These are all the movies and series which are available on the platform and their ratings:

-----* LIST OF MOVIES ON ALDO+ *-----
[1] "BATMAN BEGINS"                RATING = 3
[2] "BATMAN: THE DARK KNIGHT"      RATING = 5
[3] "SHREK"                        RATING = 4
[4] "CARS"                         RATING = 3
[5] "THE AVENGERS"                 RATING = 4
[6] "TOY STORY"                    RATING = 4
[7] "TOY STORY 2"                  RATING = 5
[8] "TOY STORY 3"                  RATING = 5
[9] "MONSTERS, INC."               RATING = 5
[10] "THE LION KING"               RATING = 4
[11] "THOR"                       RATING = 4
[12] "CAPTAIN AMERICA: THE FIRST AVENGER" RATING = 4
[13] "HULK"                       RATING = 3
```

```
[14] "IRON MAN" RATING = 4
[15] "STAR WARS: A NEW HOPE" RATING = 5
[16] "STAR WARS: THE EMPIRE STRIKES BACK" RATING = 5
[17] "STAR WARS: RETURN OF THE JEDI" RATING = 5
[18] "FOREST GUMP" RATING = 5
[19] "THE LITTLE RASCALS" RATING = 5
[20] "HER" RATING = 5

-----* LIST OF SERIES ON ALDO+ *-----

[1] "OBI-WAN KENOBI" RATING = 5
[2] "THE MANDALORIAN" RATING = 5
[3] "BLACK MIRROR" RATING = 5
[4] "THE RANCH" RATING = 4
[5] "TED LASSO" RATING = 5

***** Movie available on Aldo+ *****
Video ID: 1
Video name: Batman Begins
Video genre: Action
Video length (minutes): 142
Video rating (from 1 to 5): 3
Cast: Christian Bale, Liam Neeson, Michael Caine, Katie Holmes, Gary Oldman and Cillian Murphy
-----

***** Movie available on Aldo+ *****
Video ID: 2
Video name: Batman: The dark knight
Video genre: Action
Video length (minutes): 152
Video rating (from 1 to 5): 5
Cast: Christian Bale, Gary Oldman, Heath Ledger, Morgan Freeman and Michael Caine
-----

***** Movie available on Aldo+ *****
Video ID: 3
Video name: Shrek
Video genre: Animated/Comedy
Video length (minutes): 90
Video rating (from 1 to 5): 4
Cast: Mike Myers, Eddie Murphy, Cameron Diaz and John Lithgow
-----

***** Movie available on Aldo+ *****
Video ID: 4
Video name: Cars
Video genre: Animated/Comedy
Video length (minutes): 117
Video rating (from 1 to 5): 3
Cast: Owen Wilson, Paul Newman, Bonnie Hunt and Larry the Cable Guy
-----

***** Movie available on Aldo+ *****
Video ID: 5
Video name: The Avengers
Video genre: Action
Video length (minutes): 143
Video rating (from 1 to 5): 4
Cast: Robert Downey Jr., Chris Evans, Mark Ruffalo, Chris Hemsworth, Scarlett Johansson, Jeremy Renner, Tom Hiddleston, Clark Gregg, Cobie Smulders, Stellan Skarsgård, Samuel L. Jackson
-----

***** Movie available on Aldo+ *****
Video ID: 6
Video name: Toy Story
Video genre: Animated/Comedy
Video length (minutes): 81
Video rating (from 1 to 5): 4
Cast: Tom Hanks, Tim Allen, Don Rickles, Jim Varney and Wallace Shawn
-----

***** Movie available on Aldo+ *****
Video ID: 7
```

```
Video name: Toy Story 2
Video genre: Animated/Comedy
Video length (minutes): 92
Video rating (from 1 to 5): 5
Cast: Tom Hanks and Tim Allen
-----

***** Movie available on Aldo+ *****
Video ID: 8
Video name: Toy Story 3
Video genre: Animated/Comedy
Video length (minutes): 103
Video rating (from 1 to 5): 5
Cast: Tom Hanks, Tim Allen, Joan Cusack, Don Rickles, Wallace Shawn and Michael Keaton
-----

***** Movie available on Aldo+ *****
Video ID: 9
Video name: Monsters, Inc.
Video genre: Action
Video length (minutes): 92
Video rating (from 1 to 5): 5
Cast: John Goodman, Billy Crystal, Steve Buscemi, James Coburn, Jennifer Tilly and Mary Gibbs
-----

***** Movie available on Aldo+ *****
Video ID: 10
Video name: The Lion King
Video genre: Drama
Video length (minutes): 118
Video rating (from 1 to 5): 4
Cast: Donald Glover, Seth Rogen, Chiwetel Ejiofor, Alfre Woodard, Billy Eichner, John Kani, John Oliver, Beyoncé Knowles-Carter and James Earl Jones
-----

***** Movie available on Aldo+ *****
Video ID: 11
Video name: Thor
Video genre: Action
Video length (minutes): 114
Video rating (from 1 to 5): 4
Cast: Chris Hemsworth, Natalie Portman, Tom Hiddleston, Stellan Skarsgård, Colm Feore and Ray Stevenson
-----

***** Movie available on Aldo+ *****
Video ID: 12
Video name: Captain America: The First Avenger
Video genre: Action
Video length (minutes): 124
Video rating (from 1 to 5): 4
Cast: Chris Evans, Tommy Lee Jones, Hugo Weaving, Hayley Atwell and Sebastian Stan
-----

***** Movie available on Aldo+ *****
Video ID: 13
Video name: Hulk
Video genre: Action
Video length (minutes): 138
Video rating (from 1 to 5): 3
Cast: Eric Bana, Jennifer Connelly, Sam Elliott, Josh Lucas and Nick Nolte
-----

***** Movie available on Aldo+ *****
Video ID: 14
Video name: Iron Man
Video genre: Action
Video length (minutes): 126
Video rating (from 1 to 5): 4
Cast: Robert Downey Jr., Terrence Howard, Jeff Bridges, Shaun Touband and Gwyneth Paltrow
-----

***** Movie available on Aldo+ *****
Video ID: 15
```

```
Video name: Star Wars: A New Hope
Video genre: Science fiction
Video length (minutes): 121
Video rating (from 1 to 5): 5
Cast: Mark Hamill, Harrison Ford, Carrie Fisher, Peter Cushing and Alec Guinness
-----

***** Movie available on Aldo+ *****
Video ID: 16
Video name: Star Wars: The Empire Strikes Back
Video genre: Science fiction
Video length (minutes): 124
Video rating (from 1 to 5): 5
Cast: Mark Hamill, Harrison Ford, Carrie Fisher, Billy Dee Williams,, Anthony Daniels, David Prowse
, Kenny Baker, Peter Mayhew and Frank Oz
-----

***** Movie available on Aldo+ *****
Video ID: 17
Video name: Star Wars: Return of the Jedi
Video genre: Science fiction
Video length (minutes): 132
Video rating (from 1 to 5): 5
Cast: Mark Hamill, Harrison Ford, Carrie Fisher, Billy Dee Williams, Anthony Daniels, David Prowse,
Kenny Baker, Peter Mayhew and Frank Oz
-----

***** Movie available on Aldo+ *****
Video ID: 18
Video name: Forest Gump
Video genre: Comedy
Video length (minutes): 142
Video rating (from 1 to 5): 5
Cast: Tom Hanks, Robin Wright, Gary Sinise, Mykelti Williamson and Sally Field
-----

***** Movie available on Aldo+ *****
Video ID: 19
Video name: The Little Rascals
Video genre: Comedy
Video length (minutes): 82
Video rating (from 1 to 5): 5
Cast: Travis Tedford, Kevin Jamal Woods, Jordan Warkol, Zachary Mabry, Ross Elliot Bagley, Courtlan
d Mead, Sam Saletta, Blake Jeremy Collins, Blake McIver Ewing, Juliette Brewer, Heather Karasek and
Brittany Ashton Holmes
-----

***** Movie available on Aldo+ *****
Video ID: 20
Video name: Her
Video genre: Drama
Video length (minutes): 126
Video rating (from 1 to 5): 5
Cast: Joaquín Phoenix, Amy Adams, Rooney Mara, Olivia Wilde and Scarlett Johansson
-----

***** Series available on Aldo+ *****
Series ID: 1
Series name: Obi-Wan Kenobi
Series genre: Drama/Action
Running time per episode on average (minutes): 45
Rating: 5
Number of seasons: 1
Total number of episodes: 6
Series cast: Ewan McGregor
-----

***** Series available on Aldo+ *****
Series ID: 2
Series name: The Mandalorian
Series genre: Drama/Action
Running time per episode on average (minutes): 47
Rating: 5
Number of seasons: 2
```

Total number of episodes: 16
Series cast: Pedro Pascal, Gina Carano, Temuera Morrison, Giancarlo Esposito and Carl Weathers

***** Series available on Aldo+ *****

Series ID: 3
Series name: Black Mirror
Series genre: Science fiction
Running time per episode on average (minutes): 55
Rating: 5
Number of seasons: 4
Total number of episodes: 22
Series cast: Bryce Dallas Howard, Hayley Atwell, Miley Cyrus, Alex Lawther and Jon Hamm

***** Series available on Aldo+ *****

Series ID: 4
Series name: The Ranch
Series genre: Comedy
Running time per episode on average (minutes): 30
Rating: 4
Number of seasons: 3
Total number of episodes: 30
Series cast: Ashton Kutcher, Danny Masterson, Debra Winger, Sam Elliott, Elisha Cuthbert

***** Series available on Aldo+ *****

Series ID: 5
Series name: Ted Lasso
Series genre: Comedy
Running time per episode on average (minutes): 28
Rating: 5
Number of seasons: 2
Total number of episodes: 22
Series cast: Jason Sudeikis, Hannah Waddingham, Jeremy Swift, Phil Dunster, Brett Goldstein, Brendan Hunt, Nick Mohammed, Juno Temple and Sarah Niles

SPOILER ALERT! More movies and series are coming to Aldo+ very soon...



SHOWING ALL MOVIES AND SERIES AND THEIR RATINGS: FAILED CASE

Test steps:

1. Choose option #2 from the menu

If there is no file containing information about movies and series, their ratings will not be displayed on screen:

```
➤ make -s
➤ ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 2

These are all the movies and series which are available on the platform and their ratings:

* No such file with movies and series provided. We're sorry!
➤ 
```

TEST CASE: SHOWING ALL EPISODES OF A SERIES AND THEIR RATINGS

For this test, when the user types the third option from the menu, they should be able to see all the episodes available of a series. Some of the series on the catalogue have more than one season, so the user must first choose a series and then select what season to watch and the respective episodes with their ratings included should be shown on the screen.

Let's take a look at 2 possible scenarios: a positive one, where everything works perfectly fine; and a negative one, where invalid inputs provoke the programme to close and a restart of itself is suggested.

Test steps:

1. Choose option #3 from the menu
2. Choose a series to watch
3. Choose a season to watch

SHOWING ALL EPISODES OF A SERIES AND THEIR RATINGS: SUCCESSFUL CASE

For this scenario, option #3 is chosen and subsequently, the following output pops up on screen:

First, the list of all the series available on the application and their episodes grouped by season are displayed on screen:

```
> make -s
> ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

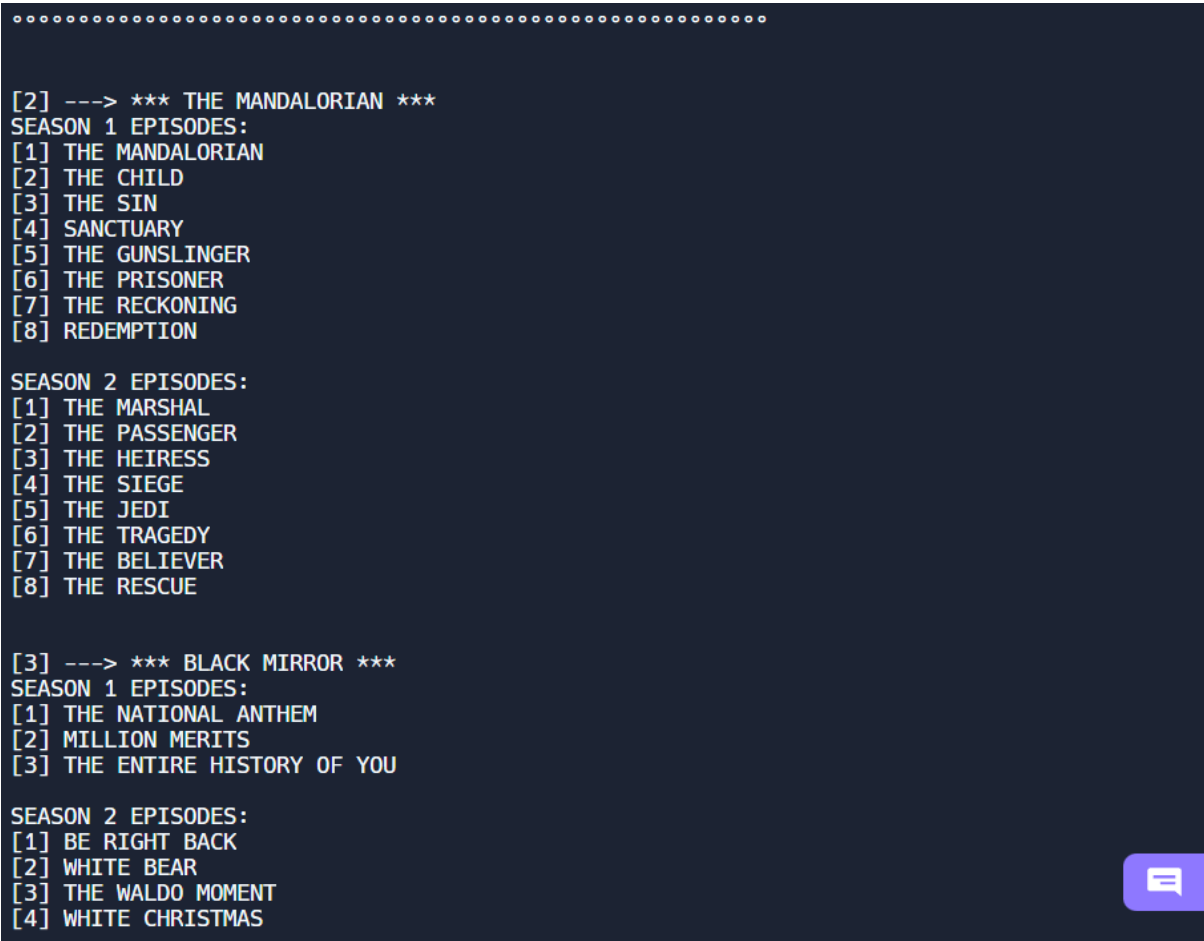
Now please choose an option depending on what you'd like to do.

Option: 3

----° These are all the series and their episodes by season available on Aldo+ °----

-----* LIST OF SERIES ON ALDO+ *-----
[1] "OBI-WAN KENOBI"
[2] "THE MANDALORIAN"
[3] "BLACK MIRROR"
[4] "THE RANCH"
[5] "TED LASSO"

[1] ---> *** OBI-WAN KENOBI ***
SEASON 1 EPISODES:
[1] PART I
[2] PART II
[3] PART III
[4] PART IV
[5] PART V
[6] PART VI
```



SEASON 3 EPISODES:

- [1] NOSEDIVE
- [2] PLAYTEST
- [3] SHUT UP AND DANCE
- [4] SAN JUNIPERO
- [5] MEN AGAINST FIRE
- [6] HATED IN THE NATION

SEASON 4 EPISODES:

- [1] USS CALLISTER
- [2] ARKANGEL
- [3] CROCODILE
- [4] HANG THE DJ
- [5] METALHEAD
- [6] BLACK MUSEUM

SEASON 5 EPISODES:

- [1] STRIKING VIPERS
- [2] SMITHEREENS
- [3] RACHEL, JACK AND ASHLEY TOO

.....

[4] ---> *** THE RANCH ***

SEASON 1 EPISODES:

- [1] BACK WHERE I COME FROM
- [2] SOME PEOPLE CHANGE
- [3] THE BOYS OF FALL
- [4] GOT A LITTLE CRAZY
- [5] AMERICAN KIDS
- [6] BETTER AS A MEMORY
- [7] I CAN'T GO THERE
- [8] TIL IT'S GONE
- [9] THERE GOES MY LIFE
- [10] DOWN THE ROAD



SEASON 2 EPISODES:

- [1] GONE AS A GIRL CAN GET
- [2] LIVING AND LIVING WELL
- [3] SITTING ON THE FENCE
- [4] LET'S FALL TO PIECES TOGETHER
- [5] I KNOW SHE STILL LOVES ME
- [6] EASY COME EASY GO
- [7] I'VE COME TO EXPECT IT FROM YOU
- [8] THE COWBOY RIDES AWAY
- [9] LEAVING'S BEEN COMING (FOR A LONG, LONG TIME)
- [10] MERRY CHRISTMAS (WHEREVER YOU ARE)

SEASON 3 EPISODES:

- [1] MY NEXT THIRTY YEARS
- [2] THINGS CHANGE
- [3] TAKE ME AWAY FROM HERE
- [4] SHE'LL HAVE YOU BACK
- [5] MY BEST FRIEND
- [6] FIND OUT WHO YOUR FRIENDS ARE
- [7] ONE OF THOSE NIGHTS
- [8] I DIDN'T ASK AND SHE DIDN'T SAY
- [9] LAST DOLLAR (FLY AWAY)
- [10] CAN'T REALLY BE GONE

.....

[5] ---> *** TED LASSO ***

SEASON 1 EPISODES:

- [1] PILOT
- [2] BISCUITS
- [3] TRENT CRIMM: THE INDEPENDENT
- [4] FOR THE CHILDREN
- [5] TAN LINES
- [6] TWO ACES
- [7] MAKE REBECCA GREAT AGAIN
- [8] THE DIAMOND DOGS
- [9] ALL APOLOGIES
- [10] THE HOPE THAT KILLS YOU

SEASON 2 EPISODES:

- [1] GOODBYE EARL
- [2] LAVENDER
- [3] DO THE RIGHT-EST THING
- [4] CAROL OF THE BELLS
- [5] RAINBOW
- [6] THE SIGNAL
- [7] HEADSPACE
- [8] MAN CITY
- [9] BEARD AFTER HOURS
- [10] NO WEDDINGS AND A FUNERAL
- [11] MIDNIGHT TRAIN TO ROYSTON
- [12] INVERTING THE PYRAMID OF SUCCESS

Now the application asks the user to choose a series to watch and then, a season of their liking. Let's choose The Mandalorian season 2 this time:

If the user types series #2, The Mandalorian should be understood by the programme, and if this is true, its rating should be shown to the user as the project requirements specify.

```
Which series do you want to watch? (type its number index): 2

--- Series details ---
Series ID: 2
Series name: The Mandalorian
Series genre: Drama/Action
Running time per episode on average (minutes): 47
Rating: 5
Number of seasons: 2
Total number of episodes: 16
Series cast: Pedro Pascal, Gina Carano, Temuera Morrison, Giancarlo Esposito
and Carl Weathers

Which season would you like to watch? 2

These are all the available episodes on season 2 and their details

-----* Season 2 *-----
The Marshal
Video ID: 1
Video name: The Marshal
Video genre: Drama/Action
Video length (minutes): 54
Video rating (from 1 to 5): 4
-----

The Passenger
Video ID: 2
Video name: The Passenger
Video genre: Drama/Action
Video length (minutes): 42
Video rating (from 1 to 5): 5
-----
```

The Heiress

Video ID: 3
Video name: The Heiress
Video genre: Drama/Action
Video length (minutes): 36
Video rating (from 1 to 5): 4

The Siege

Video ID: 4
Video name: The Siege
Video genre: Drama/Action
Video length (minutes): 40
Video rating (from 1 to 5): 4

The Jedi

Video ID: 5
Video name: The Jedi
Video genre: Drama/Action
Video length (minutes): 47
Video rating (from 1 to 5): 5

The Tragedy

Video ID: 6
Video name: The Tragedy
Video genre: Drama/Action
Video length (minutes): 34
Video rating (from 1 to 5): 5

The Believer

Video ID: 7
Video name: The Believer
Video genre: Drama/Action
Video length (minutes): 39
Video rating (from 1 to 5): 4

The Rescue

Video ID: 8
Video name: The Rescue
Video genre: Drama/Action
Video length (minutes): 47
Video rating (from 1 to 5): 5

Thanks for watching The Mandalorian!



As we can see, not only the rating is shown for each episode. The application prints more details about the episodes such as ID, name, genre and length in minutes. The more details about a series, the better for the user to get attracted and enjoy it.

SHOWING ALL EPISODES OF A SERIES AND THEIR RATINGS: FAILED CASE

Test steps:

1. Choose option #3 from the menu
2. Choose a series to watch
3. Choose a season to watch

Whenever the option is out of range, the programme will suggest a restart:

```
Which series do you want to watch? (type its number index): 8
Invalid input! Please try again by restarting the programme.
> 
```

The same applies when choosing a season:

```
Which series do you want to watch? (type its number index): 5
--- Series details ---
Series ID: 5
Series name: Ted Lasso
Series genre: Comedy
Running time per episode on average (minutes): 28
Rating: 5
Number of seasons: 2
Total number of episodes: 22
Series cast: Jason Sudeikis, Hannah Waddingham, Jeremy Swift, Phil Dunst
er, Brett Goldstein, Brendan Hunt, Nick Mohammed, Juno Temple and Sarah
Niles

Which season would you like to watch? 3
Invalid input! Please restart the programme.> 
```

TEST CASE: SHOWING ALL THE MOVIES BY THEIR GENRE AND THEIR RATINGS

SHOWING ALL THE MOVIES BY THEIR GENRE AND THEIR RATINGS: SUCCESSFUL CASE

By choosing the option #4, it is expected that all the movies available on the catalogue of Aldo+ will be shown on the user's screen as long as a file with all the movies list is available too.

Test steps:

1. Choose option #4 from the menu

```
> make -s
> ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 4

---* These are all the available movies grouped by their genre * ---

----- ANIMATED/COMEDY -----
Shrek
This movie rating is 4 out of 5! According to the critics.

Cars
This movie rating is 3 out of 5! According to the critics.

Toy Story
This movie rating is 4 out of 5! According to the critics.

Toy Story 2
This movie rating is 5 out of 5! According to the critics.

Toy Story 3
This movie rating is 5 out of 5! According to the critics.
```


----- ACTION -----

Batman Begins

This movie rating is 3 out of 5! According to the critics.

Batman: The dark knight

This movie rating is 5 out of 5! According to the critics.

The Avengers

This movie rating is 4 out of 5! According to the critics.

Monsters, Inc.

This movie rating is 5 out of 5! According to the critics.

Thor

This movie rating is 4 out of 5! According to the critics.

Captain America: The First Avenger

This movie rating is 4 out of 5! According to the critics.

Hulk

This movie rating is 3 out of 5! According to the critics.

Iron Man

This movie rating is 4 out of 5! According to the critics.

----- DRAMA -----

The Lion King

This movie rating is 4 out of 5! According to the critics.

Her

This movie rating is 5 out of 5! According to the critics.

```
----- COMEDY -----  
Forest Gump  
This movie rating is 5 out of 5! According to the critics.  
  
The Little Rascals  
This movie rating is 5 out of 5! According to the critics.  
  
-----  
  
----- SCIENCE FICTION -----  
Star Wars: A New Hope  
This movie rating is 5 out of 5! According to the critics.  
  
Star Wars: The Empire Strikes Back  
This movie rating is 5 out of 5! According to the critics.  
  
Star Wars: Return of the Jedi  
This movie rating is 5 out of 5! According to the critics.  
  
-----  
  
*****- Thanks for taking a look at our catalogue! -*****  
✶ □
```

SHOWING ALL THE MOVIES BY THEIR GENRE AND THEIR RATINGS: FAILED CASE

Test steps:

1. Choose option #4 from the menu

If the compiler does not find any file with the information about movies, a message saying that nothing was found will appear and nothing else will happen unless there is a file.

```
> make -s
> ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 4

---* These are all the available movies grouped by their genre * ---

* There's no information about movies. We're sorry!
> 
```

TEST CASE: RATING A MOVIE OR A SERIES

RATING A MOVIE OR A SERIES: SUCCESSFUL CASE

When option #5 from the menu is selected, the user is able to rate a movie or a series.

For this test, a movie will be rated.

Test steps:

1. Choose option #5 from the menu
2. Choose to rate a movie or a series
3. Choose which movie or series you want to rate
4. Give it a rate from 1 to 5

```
Option: 5
Would you like to rate a movie (m) or a series (s)? M

-----* LIST OF MOVIES ON ALDO+ *-----
[1] "BATMAN BEGINS"
[2] "BATMAN: THE DARK KNIGHT"
[3] "SHREK"
[4] "CARS"
[5] "THE AVENGERS"
[6] "TOY STORY"
[7] "TOY STORY 2"
[8] "TOY STORY 3"
[9] "MONSTERS, INC."
[10] "THE LION KING"
[11] "THOR"
[12] "CAPTAIN AMERICA: THE FIRST AVENGER"
[13] "HULK"
[14] "IRON MAN"
[15] "STAR WARS: A NEW HOPE"
[16] "STAR WARS: THE EMPIRE STRIKES BACK"
[17] "STAR WARS: RETURN OF THE JEDI"
[18] "FOREST GUMP"
[19] "THE LITTLE RASCALS"
[20] "HER"

Which movie would you like to rate? (type its number index): 1
Rate the movie from 1 to 5: 5
New rating for Batman Begins based on your liking: 5

***** Thanks for visiting Aldo+ *****

-----***** GOODBYE! *****----- 🍌 ☐
```

RATING A MOVIE OR A SERIES: FAILED CASE

When option #5 from the menu is selected, the user is able to rate a movie or a series. However, if there is no file that contains the list of movies or series, nothing will be possible to do. The user needs to see the video index in order to rate a movie or a series.

For this test, a series will be tried to be rated.

Test steps:

1. Choose option #5 from the menu
2. Choose to rate a movie or a series
3. Choose which movie or series you want to rate
4. Give it a rate from 1 to 5

```
> make -s
> ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 5

Would you like to rate a movie (m) or a series (s)? s

* No such file with series provided. You can't rate a series right now. We're sorry!
> 
```

EXTRA OPTIONS FROM THE MENU!

In order to offer the best possible service, the application is currently working on adding more movies and series to the streaming platform.

Let's take a look at what is coming in the next days!

MOVIES COMING TO THE STREAMING PLATFORM

Test steps:

1. Choose option #6 from the menu

Some movies are on their way to Aldo+; let's see which they are.

```
➤ ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 6

***** These are the movies that are coming soon to Aldo + ! *****

- The Joker
This movie rating is 5 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 7/1/2022

- Coco
This movie rating is 5 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 6/20/2022

- Mr. Bean's Holiday
This movie rating is 4 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 7/31/2022

- Ratatouille
This movie rating is 4 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 8/9/2022
```

- Encanto
This movie rating is 4 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 7/18/2022

- Star Wars: The Rise of Skywalker
This movie rating is 5 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 6/21/2022

- Finding Nemo
This movie rating is 4 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 6/25/2022

- Luca
This movie rating is 5 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 7/10/2022

- The Polar Express
This movie rating is 5 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 8/2/2022

- Cruella
This movie rating is 4 out of 5! According to the critics.
Release date on Aldo+ (mm/dd/yyyy): 7/11/2022

***** We hope you'll enjoy the coming movies! *****

----- Only on Aldo+ -----



SERIES COMING TO THE STREAMING PLATFORM

Test steps:

1. Choose option #7 from the menu

Some very nice series are on their way too! Let's see which they are.

```
Option: 7
~~~~~ These are the series that are coming very soon to Aldo+ ! ~~~~~
- The Book of Boba Fett
This series rating is 5 out of 5! According to the critics.
Release date on Aldo+: (mm/dd/yyyy): 7/15/2022
- The Crown
This series rating is 5 out of 5! According to the critics.
Release date on Aldo+: (mm/dd/yyyy): 8/1/2022
- Peacemaker
This series rating is 4 out of 5! According to the critics.
Release date on Aldo+: (mm/dd/yyyy): 6/20/2022
- Monsters at Work
This series rating is 4 out of 5! According to the critics.
Release date on Aldo+: (mm/dd/yyyy): 7/10/2022
- SpongeBob SquarePants
This series rating is 5 out of 5! According to the critics.
Release date on Aldo+: (mm/dd/yyyy): 8/2/2022

***** We hope you'll enjoy the coming series! *****

----- Only on Aldo+ -----
> □
```


EXIT THE MAIN MENU

When the user wants to exit the application, it should be done by typing the option #8.

Test steps:

1. Choose option #8 from the menu

```
> make -s
> ./main

---***** Welcome to Aldo+, your favourite place to watch anything you wish!---*****

This is the menu Aldo+ offers you:

1.- Load data file with all the movies and series available on the platform
2.- Show all movies and series and their ratings
3.- Show all episodes of a series and their ratings
4.- Show all the movies by their genre and their ratings
5.- Rate a video (movie or a series)
6.- Show all movies that are coming soon to Aldo+ !
7.- Show all series that are coming soon to Aldo+ !
8.- Exit

Now please choose an option depending on what you'd like to do.

Option: 8

OK. Thanks for visiting Aldo+

-----** GOODBYE! **-----
> 
```

PERSONAL CONCLUSION

After taking this Object-Oriented Programming course at Tecnológico de Monterrey, I have learnt lots of new things related to this programming paradigm. Now I am capable of using the most important concepts of OOP: abstraction, encapsulation, inheritance and polymorphism.

Developing this application was something quite challenging, since I had to develop it in a relatively short period of time, but at the end I succeeded in doing so. Now I feel more confident when I have to write some code; I have got more practice in the last couple of weeks and that is crucial when it comes to improving coding and software engineering skills.

Thanks to my professor Mónica Larre, for her patience, support and enthusiasm for teaching.

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